Title: Object-Handling Device, Object-Handling Installation and Object-Handling Method

Date Filed; May 1, 2006

International Application No. PCT/FR2004/002598

In the Claims:

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I claim:

1. (Currently amended) A device for handling an article (13)-such as a coil spring, the device being characterized in that it comprises comprising a body (10)-having an internal housing (12)-suitable for containing said article-(13), said housing (12)-presenting at least one open end (10A, 10B) and a constriction zone (14)-that is suitable, in a stable state in which said constriction zone (14)-presents a reduced dimension (D14X)-that is reduced in a first direction (X), for retaining said article (13)-inside the body-(10), and for being deformed to adopt a deformed configuration enabling said article (13)-to be inserted into the housing (12) or enabling said article (13)- and to be extracted from the housing (12).

2. (Currently amended) A device according to preceding claim_1, characterized in that the constriction zone (14) in its wherein in the deformed configuration thereof, the constriction zone is in a state that is unstable.

- 3. (Currently amended) A device according to claim 1-or claim 2, characterized in that wherein said body (10) is substantially elongate and tubular in shape.
- 4. (Currently amended) A device according to to any preceding claim_1, eharacterized in that wherein said constriction zone (14) in its the stable state thereof presents a reduced dimension (D14X) in a cross-section (S14) of said body (10).
- 5. (Currently amended) A device according to <u>any preceding laim 1</u>, <u>characterized in that wherein</u> said constriction zone (14) in <u>itsthe</u> deformed configuration <u>thereof</u> presents a cross-section (S14) that is substantially circular.

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6. (Currently amended) A device according to any preceding claim 5, characterized in that wherein the constriction zone (14) in its the stable state thereof presents two closer-together portions (14A, 14-B) along a short dimension (D14X) and two farther-apart portions (14C, 14D) along a long dimension (D14Y), said two farther-apart portions (14C, 14D) being suitable for being moved towards each other in order to move said two closer-together portions (14A, 14-B) apart from each other.

7. (Currently amended) A device according to any preceding claim 6, characterized in that wherein said body (10) has two open ends (10A, 10B).

8. (Currently amended) A device according to any preceeding claim 7, characterized in thawherein said body (10) includes a collar (16) close to at least one open end (10A, 10B) of said body.

9. (Currently amended) An installation for handling an article such as a helical spring, the installation being characterized in that it comprises comprising at least one holder means (22A, 22B, 22B'; 23A) suitable and arranged for holding a device (11) according to any proceeding claim 1, and at least one force-application means (24) member suitable and arranged for acting on said device (11) to deform said constriction zone (14).

10. (Currently amended) An installation according to claim 9, characterized in that it further comprises comprising a first feeder means (18) for feeding a plurality of devices (11) and a second feeder means (20) for feeding a plurality of articles (13).

11. (Currently amended) An installation according to claim 9—or claim 10, characterized in that wherein said first feeder means (18) comprises a chute (118 suitable for cooperating with said article (13).

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12. (Currently amended) An installation according to any one of claimsclaim 9, or 11, characterized in that it includes including at least one article loader means (26) suitable and arranged for inserting anthe article (13) into athe device.

13. (Currently Amended) An installation according to any one of claims claim 9 to 12, characterized in that it includes including at least one article unloader means (28) suitable and arranged for enabling an article (13) to be extracted from the device (11) in which said article (13) is housed.

14. (Currently Amended) A method of handling an article (13)—such as a helical spring, the method being characterized that that—in which the following steps are performed:

- providing a handling device (11) having a body (10) with an internal housing (12) suitable for containing said article (13), said housing (12) presenting at least one open end (10A, 10B) and a constriction zone (14) suitable, in a stable state in which said constriction zone (14) presents a reduced dimension (D14X) that is reduced in a first direction (X), for retaining said article (13) inside the body (10), and for being deformed to adopt a deformed configuration enabling said article (13) to be introduced into the housing (12) or enabling said article (13) to be extracted from the housing (12);
 - deforming the constriction zone (14) so that it adopts its deformed configuration;
- inserting the article (13)-into the body (10)-while the constriction zone (14)-is in the deformed configuration thereof; and
- causing the constriction zone (14) to return to itsthe stable state thereof in which the article (13) is held inside the body (10).
- 15. (Currently amended) A method according to the preceding claim 14, characterized in that wherein, in order to extract the article (13)—from the device—(11), the constriction zone (14)—is deformed so that said zone adopts the deformed configuration thereof.

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16. (Currently amended) A method according to claim 14-or claim 15, characterized in that wherein the constriction zone (14) in its the deformed configuration thereof is in a state that is unstable.